Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: Beaman Pond Lot

Date Posted: July 13, 2015
End of Comment Period: August 27, 2015

Region:	Central
Recreation District:	**Central Highlands**
Forest Management District:	**Mid State**
State Forest:	**Otter River State Forest – Beaman Pond Lot**
Closest Road:	**Route 202**
Town	**Baldwinville and Winchendon, Massachusetts**

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Overview:

The Beaman Pond lot is a ±290 acre isolated parcel of the Otter River State Forest complex. It is located off of Route 202 in Baldwinville and Winchendon, Massachusetts. The parcel was acquired in the early 1900s. The U.S. Army Corps of Engineers (ACOE) acquired by takings many acres of land on the outskirts of this parcel in the mid 1900s for flood control operations (Birch Hill Dam). The Otter River State Forest complex encompasses about 1,200 acres, plus an additional 4,000 acres which is leased by the ACOE. In 1935, Otter River State Forest housed a Civilian Conservation Corps (CCC) camp which planted thousands of trees throughout the area, including the plantations on this parcel.

There are three plantations at the Beaman Pond lot, totaling 143 acres. There are two plantations consisting of non-native red pine (*Pinus resinosa*) and Scots pine (*Pinus sylvestris*) (101 acres) and the third is a native plantation of white pine (*Pinus strobus*) (42 acres). Additionally, there is an estimated 96 acres of a mixed white pine /hemlock/hardwoods stand. It is estimated that the trees in these stands are approaching 85 years in age. The health and vigor of these plantations and the mixed white pine stand have been declining steadily due to insect and fungus damage and currently pose a significant risk to public safety from falling limbs and trees.

Project Purpose, Goals and Objectives:

As outlined in the Forest Futures Visioning Process and associated DCR Management Guidelines, published in March 2012, the Beaman Pond lot has a Parkland designation. This property is located in an area with high recreational value including an established campground, day use picnic areas, hiking trails and waterfront swimming opportunities. While commercial production of wood for wood products is not an intended goal for Parkland designated properties, silvicultural treatments are permitted for the following purposes (Commonwealth of Massachusetts, 2012):

1.) Vegetation management necessary to protect public health and safety, public interests, public assets and/or restore or maintain recreation sites following significant natural disturbances or destructive insects or disease.
2.) Removal of plantations to restore more natural and diverse vegetative communities – if public health and safety are at risk, or to restore ecologically significant communities such as pitch pine barrens.

The project at the Beaman Pond Lot is being proposed at this time because:

1.) The plantations offer little vegetative diversity and are rapidly declining in health and vigor.
2.) White pine tree condition on the property is declining in health and vigor.
3.) Public safety and assets are being jeopardized by the current forest condition.

The goals and objectives of this project include:

1.) Demonstrate thinning to prepare an even aged plantation of red pine, white pine and Scots pine for the regeneration of a mixture of native tree species, including white pine and deciduous hardwoods.
2.) Demonstrate thinning to prepare a mixed stand consisting of white pine, hemlock and mixed hardwoods for the regeneration of a mixture of native tree species.
3.) Release advanced regeneration of native tree species present in portions of the forest which have undergone past forest management.
4.) Increase the vegetative diversity and structural complexity within the project area to include an assortment of native plant species including native shrubs and herbaceous plants.
5.) Demonstrate harvesting techniques and best management practices that protect forest productivity, soil and water resources.
6.) Mitigate public safety risk by implementing silvicultural treatments that work to proactively harvest trees which are rapidly failing in condition.
7.) Educate the public on forest management practices by placing additional interpretive signage along the Wilder-Mackenzie interpretive hiking trail and in other locations as appropriate.
8.) Provide a small supply of timber to the sawmill at Otter River State Forest for in-kind use to repair the park buildings and other infrastructure at the Otter River State Forest and Lake Dennison campgrounds and day use areas.

Stand Descriptions:

The Beaman Pond lot has a complex glacial history and therefore varied topographic characteristics. The property is underlain by an outwash plain of mostly droughty soils that are moderately well drained to excessively well drained. Soil types include Naumburg fine sandy loam, Adams loamy sand, Allagash fine sandy loam, Colton gravelly loamy sand, Croghan loamy fine sand and a Becket-Skerry association. The wetlands are underlain by very poorly drained soils, including Searsport loamy sand and Bucksport and Wonsqueak mucks. The project area consists of approximately 239 acres of mostly red, white, and Scots pine plantations. Stand age is estimated to be around 85 years old.

The DCR Management Guidelines state that forest stands will be classed and considered for silvicultural treatments that generally fit their productivity, structural complexity (or potential thereof) and diversity. An analysis of stands 1 – 4 of the Beaman Pond lot site history (land use; agriculture/logging) and conditions (soil types, productivity; vegetation cover) suggests that the majority of these even-aged,

lower complexity stands have a medium productivity and complexity. This implies that the site is suited for both even-aged management and uneven-aged management.

Stand 1 is an 87 acre red pine plantation in seven distinct areas. The overstory consists mostly of mature red pine trees with inclusions of native white pine. Advanced regeneration of mixed hardwoods and white pine is present and ranges from adequate to very dense as a result of past silvicultural treatments (described below) and overstory mortality. Stand condition and tree vigor is declining at this time. Tree quality is fair to good. The mature overstory trees have reached their maximum productive economic age and have stagnated in growth. Since these trees are no longer growing vigorously, they are more susceptible to infestation and mortality from insects and disease. Red pine scale and diplodia tip blight have caused widespread mortality in nearby red pine stands that are in similar condition to this plantation. Mortality is present in sections, including patches of dead standing red pine. The stocking level, or tree density, is moderate to high. The red pine plantations on the property have been previously treated except for the northern area on the west side of Route 202. The red pine located on the east side of Route 202 was treated in 1989, the red pine located in the northwestern portion of the property was treated in 1993 along with the white pine plantation and the red pine south of the campground and on the west side of the campground road was treated in 2000 along with the mixed white pine/hemlock/hardwood stand. These treatments were the preparatory cut of the shelterwood regeneration method aimed at harvesting portions of the overstory to create optimal conditions for the establishment of regeneration in the understory.

Stand 2 is a 42 acre white pine plantation in two distinct areas in the northern portion of the property. The overstory consists mostly of mature white pine trees with minimal deciduous hardwoods. The far western area of this stand was treated in 1993 along with the northwestern portion of stand 1. The understory in this area contains dense pockets of white pine advanced regeneration. The other section contains scarcer amounts of mostly white pine regeneration. Northern red oak (*Quercus rubra*) advanced regeneration is present throughout the understory. Overall stand condition and tree quality is extremely poor. Similarly to stand 1, stand condition and vigor is declining rapidly, with dead standing trees throughout. The stocking level is high. It appears that these trees could have a needle cast disease similar to what areas of the northern New England states are experiencing. Disease and a low live crown ratio combined with the stressors of competition and site condition could put this stand at significant risk for a quick widespread mortality.

Stand 3 is a 14 acre Scots pine plantation. The overstory consists mostly of mature Scots pine trees. There is no evidence of past management in this plantation. Advanced regeneration is present in pockets and consists mostly of white pine and red oak. The stocking level is high. As with stands 1 and 2, growth has stagnated due to declining tree vigor. Mortality is evident with dead standing trees present and the live crown ratio in this stand is very low as well. Tree quality is poor.

Stand 4 is a 96 acre stand of mostly white pine with Eastern hemlock (*Tsuga canadensis*) and mixed hardwoods as a secondary component. This stand is not a plantation, it was seeded naturally. Portions of the stand on the east side of Route 202 were treated in 1992 and the majority of the stand on the west side of Route 202 was treated in 2000 along with the neighboring area of stand 1. Regeneration is adequate and consists of pockets of white pine and mixed hardwoods. Hemlock and mixed hardwoods make up half of the stands stocking at various levels. The condition of the white pine is fading similarly to stand 2 but tree quality is fair. Stocking is moderate to high.

Aesthetic, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations:

Aesthetic:

The Beaman Pond lot is located along a portion of Route 202, Dennison Road (Baldwinville) and along "Old 202" which are actively used for recreation. All aesthetic considerations will be made to legal recreational users of the state forest. Slash over 1" in diameter will be lopped to under 2 feet in height above the ground. Larger trees along the edges of trails will be retained. As mentioned in the DCR Management Guidelines for roads and trails, hazard trees will be harvested along the truck roads, skid trails and hiking trails. Harvester operation will be limited to times when ground conditions are stable. Directional felling to protect residual trees, wetlands, woods roads and trails will also be implemented.

Recreation:

There are many passive recreational uses of the Beaman Pond lot and surrounding protected lands (Birch Hill Wildlife Management Area, Lake Dennison Recreational Area, Birch Hill Flood Control Area). Hiking, mountain biking, cross country skiing, snowshoeing, hunting and fishing, equestrian use, dog sledding, swimming and legal snowmobiling are potential uses of this state forest. The Wilder-Mackenzie interpretive hiking trail is a popular trail which connects Otter River campground to Lake Dennison. The project area will be closed to the public during active harvesting hours. There is an extensive network of snowmobile trails that is permitted for use and maintained by the Coldbrook Snowmobile Club. These trails extend through several local towns. Some of these trails will be utilized as main truck/access roads (see Project Map). Active harvesting operations will be planned to minimize impacts to recreational users as much as possible.

Wetlands:

There are seven mixed wooded swamps, three shrub swamps, one potential vernal pool and one deciduous wooded swamp located within the project area or on its edge. Beaman Pond, although outside of the project area, is located centrally in the state forest and is a result of a CCC constructed dam. This pond was at one time regularly drained and dredged. It is currently utilized as a designated swimming area at Otter River campground. There are three perennial streams within the project area. The first is Beaman Brook which enters the project area from the east side of Route 202 and flows into the southern end of Beaman Pond. The second perennial stream enters the property from the south and flows north into Beaman Pond. A third perennial stream flows northwestward out of Beaman Pond into the Mud Pond wetland system located on the ACOE property. All wetlands, potential vernal pools and streams will have appropriate buffers as indicated in the Massachusetts Forestry Best Management Practices Manual (BMPs). These buffers and filter strips will be delineated in the field prior to harvesting. This will aid in directional felling away from these resource areas. No equipment will operate in streams, wetlands or wetland buffers except on pre-existing woods roads and trails or at designated crossings approved by a forest cutting plan.

Cultural Resources:

The Beaman Pond lot was reforested by plantings on lands which were cut over, burned over and agriculturally abandoned. There is a significant cultural history surrounding the state forest and within the state forest itself. Otter River State Forest campground, Otter River campground contact station, Beaman Pond and its dam were constructed by the CCC. "New Boston", once located in the vicinity, was a town hamlet that was abandoned when the ACOE took much of its land for flood control and management along the Millers River and associated tributaries. During construction of the flood control area, Route 202 and the railroad were moved to their current locations. Birch Hill Dam and associated Tully Dam (Royalston, MA) and their flood control areas prevent the downtown areas in the towns of Athol and Orange from flooding during high water events along the Millers River and its tributaries.

There are many old town roads, cellar holes, wells, New Boston Cemetery and other historical features located in the area. The proposed project area will not include any portion of what makes up Otter River State Forest campground. Cultural resources were not identified in the proposed project area during preparations for this proposal. Otter River is the first established state park in Massachusetts and will be celebrating its 100th anniversary in 2015.

Rare and Endangered Species

A review of the Natural Heritage and Endangered Species Program (NHESP) atlas shows that there are no habitat restrictions located within the project area. NHESP will review the project prior to any harvesting to determine if any limitations or modifications will be required.

Wildlife

There are signs of deer, moose and turkey using this area. Moose and deer browse are not problematic for the regeneration at this time. Pileated woodpecker sign was observed throughout the project area. Large and small mammals and numerous bird species are assumed to utilize the project area. Ring-necked pheasants are stocked regularly within the vicinity and additional hunting for native game birds is a common activity. Rabbit are common in the area as well. As outlined in the DCR Management Guidelines, selected large trees will be reserved as wildlife trees. Snags, dead trees and coarse woody debris (CWD) will be retained for habitat as well. Browse for wildlife will be enhanced during the harvest and for many years after the harvest as regeneration becomes established. Mast producing trees such as black cherry and oak will be retained whenever possible. All potential vernal pools will be treated as certified vernal pools.

Silviculture:

The overall goal of this harvest is to regenerate mature non-native plantations of red and Scots pine and a native plantation of white pine that are losing vigor and in some cases succumbing to a combination of insect, disease and competition induced mortality to a forest that is dominated by a diversity of species which are vigorous in growth.

The primary goal of this project is to remove a portion of the overstory to allow sunlight to reach the forest floor in order to regenerate stands that are currently lacking structural diversity and a younger age class, to partially release advanced regeneration and to remove the declining overstory trees. Secondary goals and objectives include conversion of red pine and Scots pine plantations to native stands comprised of a diverse mix of native tree species. Similarly, the goal for the mixed white pine/hemlock/hardwood stand is to create a new age class that contains a more diverse mixture of native species. White pine, pitch pine (*Pinus rigida*) and other hardwoods, particularly red oak that are well adapted to droughty conditions are preferred for this site. Creating and diversifying the structural and vegetative diversity of these stands is also a secondary goal of this project.

Even-aged silvicultural treatments in stands 1, 2 and 4 from 1992 through 2000 by means of the shelterwood system began their regenerative process. The shelterwood system gradually reduces the overstory stand density in a series of thinnings in order to fully regenerate the stand over time. Advanced regeneration present in areas of stands 1, 2 and 4 is adequate, growing vigorously and ready to be partially released at this time. Enough of the overstory in each stand will be harvested to reduce the stocking level from high to medium-low. This will allow for an increase in available sunlight and moisture in regards to advanced regeneration.

Stands 1 and 4 will undergo another cutting in the even-aged shelterwood system. This treatment is intended to partially release advanced regeneration in areas that have been previously treated. In stand 4, a preparatory cutting will be done which will thin the least desirable overstory trees, partially release seed trees which will regenerate the stand as well as prepare the site for the establishment of regeneration.

Stands 2 and 3 will undergo a patch clearcutting silvicultural treatment. At this time, these stands are in such poor quality and condition that the overstory trees will respond poorly if at all to any thinning treatments. The patch clearcut sizes will not exceed one acre and will require agency approval by the Commissioner. Creating openings in these stands will benefit tree species that are mid-tolerant and intolerant to shade (white pine, red oak, birch and maple) than the more shade tolerant species (beech, hemlock).

Sale Layout and Harvesting Limitations:

This project will generally treat the 239 acres of the forestland described above, in one single harvest. There will be several landing options available to the harvester. These landing sites are a combination of open gravel pits, mowed fields, power lines or have previously been used as landings in past operations. Providing multiple options to the harvester will allow for better access and resource protection at the state forest. This includes the establishment of a new landing site if needed. The proposed landing (farthest east) was last used as a landing site in 1992. The landing site to its west is a mowed field and the four landing sites farthest west are old gravel sites (3) and a power line.

Access for this operation is excellent. There are several roads available for trucking and skidding from previous harvests (see Project Map). Truck road options for utilization to access the potential landing sites include Route 202, Dennison Road, Otter River Campground road, the park road to Lake Dennison day use area and "Old 202". Most of the pre-existing skid trails and woods roads will be utilized as primary skid roads during the harvest. Secondary skid trails will be created when necessary to access parts of the project area that do not already have access. Trees will be cut up to the edges of roads and trails to lessen hazardous tree presence where necessary.

All wetland resource areas as well as no-cut areas will be buffered using paint in the field. This will indicate that machinery should not operate within the buffer and trees should be felled away from the buffered area. At this time, it appears that there will be at least one stream crossing (existing with culvert) and no wetlands crossings. If it is determined that a crossing is necessary, BMP's will be used to lessen the pressures on wetland resource areas. In the project area, wetland resource areas will be delineated with flagging and subsequently marked with paint. Wetlands will be buffered with a 50-foot no cut area except in situations where hazardous trees are present along roadways and trails and on pre-existing roads and trails.

A whole tree logging system or a cut to length logging system will be utilized for this project. There is a significant amount of low quality wood present within this proposed project. A whole tree system will better utilize larger volumes of low quality wood than a cut to length system. The stand exam will determine an estimated volume of this low quality wood. If a whole tree logging system is used, the sale will be laid out in such a way that an average of two cords of CWD per acre is retained onsite.

The project will take place when the ground is dry, frozen or otherwise stable. The well drained soil conditions of this site will prove to be very stable compared with other more moderate to poorly drained soil types. Skid trails will be properly stabilized to prevent erosion and sedimentation with the

use of water bars and/or slash where necessary. Winter harvesting would require some of the snowmobile trails to be plowed/sanded, weather permitting. This could prove problematic for local snowmobilers. Discussions to work out an agreed upon arrangement that will be beneficial for both this recreational group and moving the harvest forward will be worked out.

References:

Commonwealth of Massachusetts. Department of Conservation and Recreation. *Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines*. March 2012.

Attached: Topographic map showing project details. Locus map showing project location within regional context.

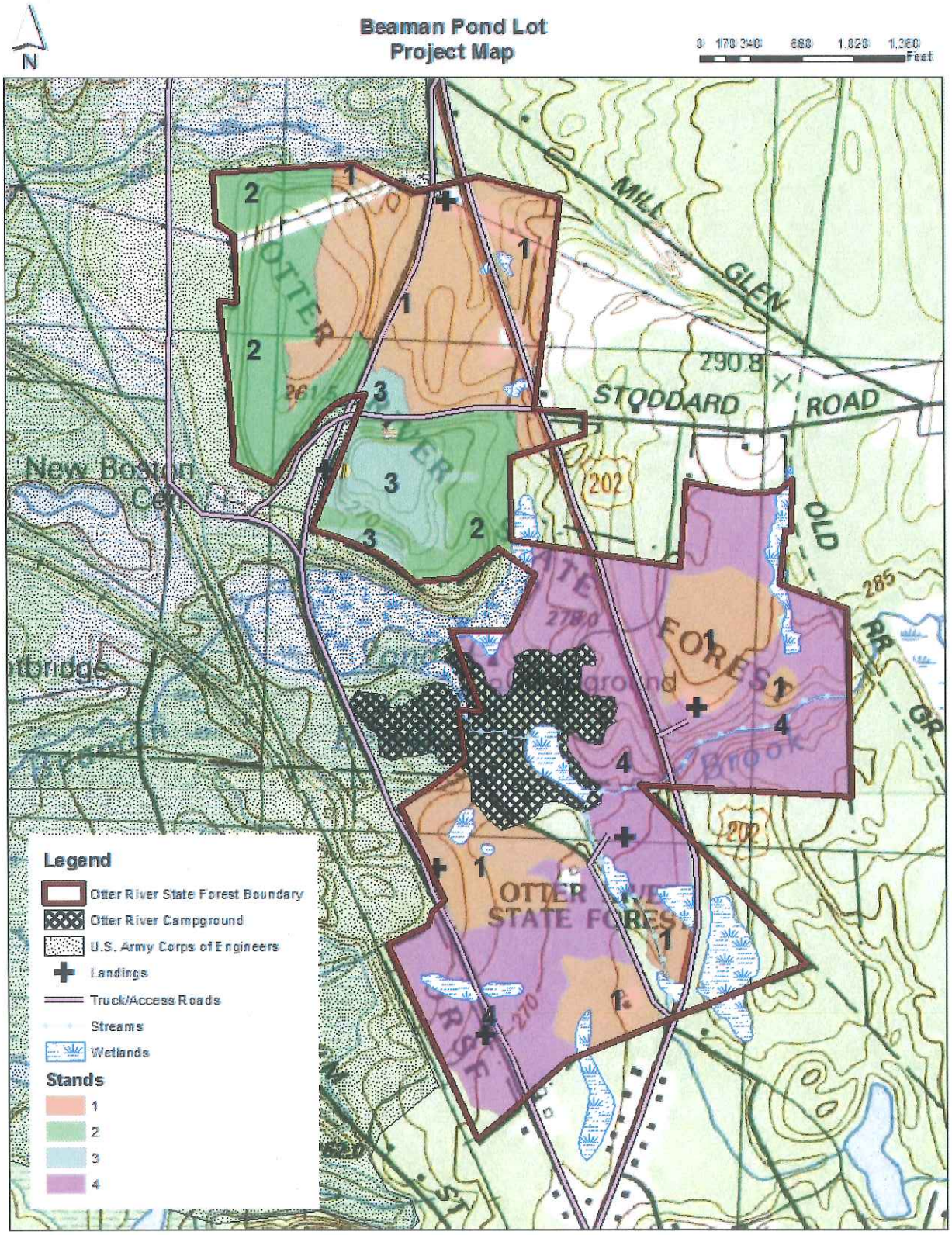
District Forester: _____ **Date:** 7/2/15

Field Operations Team Leader
Or Park Supervisor: _____ **Date:** 7-7-15

Regional Director: _____ **Date:** 7/13/15

Management Forestry
Program Supervisor: _____ **Date:** 7/2/2015

Beaman Pond Lot
Project Map



Beaman Pond Lot
Locus Map